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Effect of soil variability on growth and production of a soybean crop

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In a soil complex representative of eastern Cordoba, with wide variability in pH and electric conductivity (Ce) due to variable chemical properties and high contents of exchangeable sodium, important differences in the establishment, growth and yield of soybean crops were observed. With the objective of evaluating variability in soybean productivity, an experiment was conducted in San Marcos Sud, Córdoba, Argentina, on a soil complex, Vllws use capacity, 50% of saline-sodic soils. On a soybean plot (SPS 4x4), six areas were selected for higher soybean height; within them three sectors were identified: High Productivity (HP), Medium Productivity (MP) and Low Productivity (LP). A 1 meter row was harvested at maturity (R8 stage) and yield and its components were determined. Ce and pH of the first two horizons (H1 and H2) in soil were determined. HP plots showed the lowest values of pH and Ce, which correlated highly and significantly with yield components. In addition, high determination coefficients between yield and H2 soil variables were detected. Although pH and Ce of H2 are not the only parameters in determining yields, they are easy to measure and low cost to be used as indicators of potential soybean production. Further information about different soybean cultivars performance in different environments would allow the generation of equations to predict soybean yields as a function of soil parameters.